

**PATENT COOPERATION TREATY**  
**PCT**  
**INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY**  
(Chapter II of the Patent Cooperation Treaty)  
(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 35675 PC 01	<b>FOR FURTHER ACTION</b>		See Form PCT/IPEA/416
International application No. PCT/DK2004/000775	International filing date ( <i>day/month/year</i> ) 08.11.2004	Priority date ( <i>day/month/year</i> ) 07.11.2003	
International Patent Classification (IPC) or national classification and IPC G06F1/20			
Applicant ASETEK A/S			
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 6 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input checked="" type="checkbox"/> (<i>sent to the applicant and to the International Bureau</i>) a total of 36 sheets, as follows:</p> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</li> <li><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</li> </ul> <p>b. <input type="checkbox"/> (<i>sent to the International Bureau only</i>) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>			
<p>4. This report contains indications relating to the following items:</p> <p> <input checked="" type="checkbox"/> Box No. I Basis of the opinion  <input type="checkbox"/> Box No. II Priority  <input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability  <input type="checkbox"/> Box No. IV Lack of unity of invention  <input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement  <input type="checkbox"/> Box No. VI Certain documents cited  <input type="checkbox"/> Box No. VII Certain defects in the international application  <input type="checkbox"/> Box No. VIII Certain observations on the international application </p>			
Date of submission of the demand  22.09.2005	Date of completion of this report  12.12.2005		
Name and mailing address of the international preliminary examining authority:   European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016	Authorized Officer  Arranz, J Telephone No. +31 70 340-4870		

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**Box No. I Basis of the report**

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
  - This report is based on translations from the original language into the following language, which is the language of a translation furnished for the purposes of:
    - international search (under Rules 12.3 and 23.1(b))
    - publication of the international application (under Rule 12.4)
    - international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements\*** of the international application, this report is based on (*replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report*):

**Description, Pages**

1-24 received on 25.10.2005 with letter of 20.10.2005

**Claims, Numbers**

1-69 received on 25.10.2005 with letter of 20.10.2005

**Drawings, Sheets**

1/14-14/14 as originally filed

a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing

3.  The amendments have resulted in the cancellation of:

the description, pages  
 the claims, Nos.  
 the drawings, sheets/figs  
 the sequence listing (*specify*)  
 any table(s) related to sequence listing (*specify*)

4.  This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

the description, pages  
 the claims, Nos.  
 the drawings, sheets/figs  
 the sequence listing (*specify*)  
 any table(s) related to sequence listing (*specify*)

\* If item 4 applies, some or all of these sheets may be marked "superseded."

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**Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

**1. Statement**

Novelty (N)	Yes:	Claims	2-69
	No:	Claims	1
Inventive step (IS)	Yes:	Claims	
	No:	Claims	1-69
Industrial applicability (IA)	Yes:	Claims	1-69
	No:	Claims	

**2. Citations and explanations (Rule 70.7):**

**see separate sheet**

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Re Item V.

1 Reference is made to the following documents:

- D1 : US 6 019 165 A (BATCHELDER ET AL) 1 February 2000 (2000-02-01)  
D2 : US 6 263 957 B1 (CHEN SHIAW-JONG S ET AL) 24 July 2001 (2001-07-24)  
D3 : US 2003/151895 A1 (ZUO JON) 14 August 2003 (2003-08-14)  
D4: US-A-4 898 579 (GROSHONG ET AL) 6 February 1990 (1990-02-06)  
D5: WO 01/25881 A (ASETEK A/S; ERIKSEN, ANDRE, SLOTH; ADAMSEN, PER)  
12 April 2001 (2001-04-12)

2 INDEPENDENT CLAIM 1

- 2.1 The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 1 is not new in the sense of Article 33(2) PCT.

Document D1 discloses (the references in parentheses applying to this document):  
a cooling system for a computer system ("heat exchange apparatus", Col.2, line 42. *It is implicit for the skilled person that the apparatus of D1 is a computer system, see Col.3, line 2, "microprocessor"*), said computer system comprising

- at least one unit such as a central processing unit (CPU) generating thermal energy and said cooling system intended for cooling the at least one processing unit ("microprocessor", col.3, line 2 and "heat source", Col.4 line 63 - Col. 5, line 37) and comprising

- a reservoir having an amount of cooling liquid flowing through the reservoir ("active spreader plate (22)", and "the fluid to circulate through the flow channels", Col.4, line 63 - Col. 5, line 37 and Col.5, line 53 - Col.7, line 3) from an inlet to an outlet of the reservoir (see Figure 5, the openings to from the flow channels (50) to passageways (76)), said cooling liquid intended for accumulating and transferring thermal energy dissipated from the processing unit to the cooling liquid ("heat transfer fluid releases heat", Col.4, line 63 - Col. 5, line 37 and Col.5, line 53 - Col.7, line 3),

- connections being provided between the inlet of the reservoir and a heat radiator and between the outlet of the reservoir and the heat radiator for conducting the

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cooling liquid from the heat radiator to the reservoir and from the reservoir to the heat radiator ("multiple conduits (74 and 78) flowably connecting the flow channels (50) and (72) with passageways (76)", Col.5, line 53 - Col.7, line 3 and Figure 5),

- said cooling liquid communicating with channels or segments being provided inside the reservoir ("flow channels", Col.4, line 63 - Col. 5, line 37 and Col.5, line 53 - Col.7, line 3) or being provided by adopting a certain shape of a heat sink with segments ("fin array (52)", Col.4, line 63 - Col. 5, line 37 and Col.5, line 53 - Col.7, line 3 and Fig. 5),
- the heat exchanging interface intended for providing thermal contact between the processing unit and the cooling liquid for dissipating heat from the processing unit to the cooling liquid, when the cooling liquid passes the heat exchanging interface ("active spreader plate (20), Col.4, line 63 - Col. 5, line 37 and Col.5, line 53 - Col.7, line 3 and Fig. 5),
- a pumping means being provided as part of an Integrate element, said integrate element comprising the heat exchanging Interface, the reservoir and the pump ("centrifugal pump", Col.5, line 27 and Col.5, line 53 - Col.7, line 3 and Figure 5. *The heat exchange apparatus of D1 is an integrated system*),
- said pump intended for pumping the cooling liquid into the reservoir, through the reservoir and from the reservoir to a heat radiating means (see and Col.5, line 53 - Col.7, line 3 and Fig. 5),
- said pumping means, preferably an impeller, being mechanically integrated with a rotor of the pump and said pumping means being submerged in the cooling liquid of the reservoir ("impeller...immersed in the heat transfer fluid", Col. 5, lines 21-37 and Col.5, line 53 - Col.7, line 3 and Fig. 5. *Furthermore, the impeller of D1 is mechanically integrated with a rotor, Col.8, line 20, said rotor is magnetically coupled to the rotor of the fan*),
- said heat radiating means intended for radiating thermal energy from the cooling liquid, dissipated to the cooling liquid, to surroundings of the heat radiating means

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*("second active spreader plate and the fan frame", Col.5, line 53 - Col.7, line 3 and Fig. 5).*

Consequently, D1 discloses all the features of claim 1.

**3 INDEPENDENT CLAIMS 12,21,33,43,63,67**

The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claims 12,21,33,43,63,67 does not involve an inventive step in the sense of Article 33(3) PCT.

The additional subject-matter of claims 12,21,33,43,63,67 relates merely to a design choice (claim 12), to practical implementation details (claims 21,33,43) or to widely used control methods (claim 63 and claim 67, e.g. see D4, Col.7, line 1 - Col.8, line 40).

**4 DEPENDENT CLAIMS 2-11,13-20,22-32,34-42,44-62,64-66,68-69**

Dependent claims 2-11,13-20,22-32,34-42,44-62,64-66,68-69 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of novelty and/or inventive step (Article 33(2) and (3) PCT), see documents D1-D5 and pages mentioned in the Search Report.